

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 7, 1905.—"On the Inheritance of Coat Colour in Horses." By C. C. Hurst. Communicated by W. Bateson, F.R.S.

Analysis of the Stud Book shows that in thoroughbred horses chestnut is a Mendelian recessive to bay and brown, which are dominants. Omitting other colours, it appears that when mated with chestnuts, bays and browns are either (a) pure DD, giving no chestnut foals, or (b) DR, giving, on an average, equality of chestnuts and of dominants.

Chestnuts mated with chestnuts (of any ancestry) breed true to chestnut, with about 1 per cent. of exceptions (9 in 1104), which may perhaps be due to errors in the records.

These observations differ from those of Prof. Pearson, who found no intrinsic difference between the inheritance of chestnut and other colours (Phil. Trans., A, vol. cxcv.), and has declared (*Biometrika*, ii., p. 214) that Mendelian principles do not apply to horse-colours.

(Note added January 31.)

In the paper read January 18 Prof. Weldon disputes these conclusions, while admitting that chestnuts breed true with about 1.5 per cent. of exceptions. His argument depends on the recorded exceptions. The Stud Book is very accurate, but many of the records are afterwards corrected, and there is sufficient margin of demonstrable error to make it possible that the rare exceptions which cannot be eliminated may be due rather to mistake than to physiological peculiarity in the animals. Very few of the supposed exceptions have appeared in public uncorrected. Genuine exceptions may perhaps occur, but the returns have scarcely the extreme precision necessary to establish such occurrences. Similarly the records show occasional exceptions to the purity of the pure dominants—about 1 per cent.

It is no doubt by including the families in which these exceptions occur among those from the DR dominants that Prof. Weldon has found a large excess of dominants from the mating DR×R.

Finally, the distinct properties of chestnuts must be ascribed to segregation and not to ancestry, for their behaviour in heredity is entirely different from that of bays and browns, though their ancestral composition may for several generations have been the same.

January 25.—"Observations and Photographs of Black and Grey Soap Films." By Herbert Stansfield. Communicated by Prof. Schuster, F.R.S.

This paper describes some work on soap films that originated with an examination of the two kinds of black films, undertaken in connection with a continuation of Reinold and Rücker's researches on soap films. The two kinds of black soap film were first described by Newton. Reinold and Rücker made electrical measurements which indicated that one black film was twice the thickness of the other, and this result has been confirmed by Johannott's measurements with a Michelson interferometer. Johannott found that the limiting thickness of the thicker black was $12\mu\mu$ (micromillimetres), after which it changed abruptly to the thinner black, $6\mu\mu$ thick.

Vertical plane films were examined by reflected light with a low power magnification, and it was found that the abrupt change from the thicker to the thinner black could readily be observed with films made from a solution of sodium oleate in water. It was also found that the change from one black to the other was the last and most striking of a series of similar changes that take place as a film thins. The process of thinning appears to be continuous and gradual until a thickness of about $100\mu\mu$ is reached, but after that it is accompanied by a series of abrupt steps. The photographs, taken with a camera and film box made for the purpose, show the two black films and three stages between the coloured part of the film and the thicker black which are called the first, second, and third greys, the numbers increasing with the thickness as in Newton's orders of colours.

The photograph reproduced in Fig. 1 shows a vertical frame, made of thin glass rod, supporting a film which is

in the act of changing from the thicker to the thinner black; the small white discs that are formed on the advancing boundary of the thinner black appear to consist of material removed in the process. A narrow line of the first grey and traces of the thicker greys can still be seen between the coloured part of the film and the black.

A film shut up in an air-tight glass cell containing some of the soap solution does not thin beyond the thicker black stage if the equilibrium between the film and the water vapour is not disturbed. The thinner black is formed if

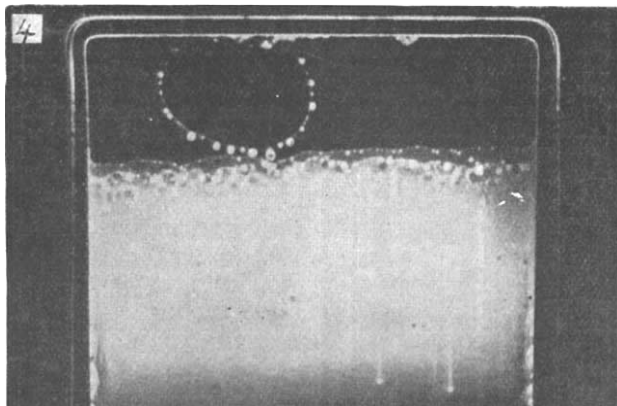


FIG. 1.—Oleate of soda film. Magnification 9. Photograph showing formation of the thinner black, and remnants of the grey stages.

evaporation takes place from the film; it may be produced by bringing a light near to the cell. Johannott has recently shown that the same effect can be produced by a sudden increase of pressure in the cell. The change back again from the thinner to the thicker black, or to still thicker stages, can be produced by causing water vapour to condense on the film.

The paper also deals with the formation of the coloured patches which are often seen moving down through a coloured film. They have round heads and drawn out tails, and bear some resemblance to tadpoles. The head often shows concentric rings of colour, indicating that it is like a convex lens in shape. These tadpoles, or lens-

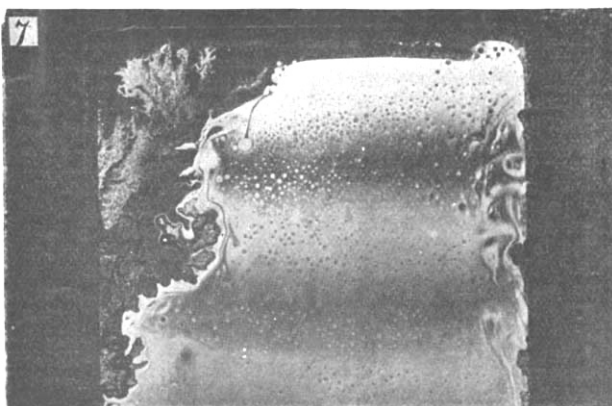


FIG. 2.—Oleate of p tash film. Showing a growth of solid material on the left side, and lens-shaped thickenings falling through the coloured part of the film.

shaped bodies, often have their origin in minute grains which form in the black at the top of the film.

Fig. 2 shows the way in which solid material sometimes grows in a film. The film represented, instead of thinning in the usual way and becoming all black, only developed a few millimetres of black at the top, and then continued for hours to produce swarms of lens-shaped thickenings. When a film is behaving in this way, the grains in the

black and the lens-shaped thickenings in the coloured part of the film may be seen shooting into the tips of the dendritic growth of solid material.

The separation of solid matter in a soap film is probably connected with the, formation of solid pellicles on the surfaces of aqueous solutions, which has been described by Ramsden, and it supports the theory of churning, advanced by Agnes Pockels, that the butter separates out in the bubbles formed in the churning process.

A film which is thinning rapidly owing to rapid evaporation often develops a curious "grey pattern" when a considerable amount of black has been formed. This pattern sometimes shows five or six grey stages of thickness, and seems to be produced by material spreading out into the film from thickenings which have accumulated during the thinning process.

It is suggested that the grey pattern, the grains in the black, and the lens-shaped thickenings are formed, like the solid growths in the films, by the concentration of the soap solution.

February 15.—"The Influence of Increased Barometric Pressure on Man. No. I." By Leonard Hill, F.R.S., and M. Greenwood.

The results of the present investigation show that

(1) A man can be submitted to a total pressure of seven atmospheres without untoward effects, provided decompression be effected gradually, and the capillary circulation be aided by repeated contractions of muscles, joint movements, and changes of posture.

(2) There is no sense of increased barometric pressure so long as the former is constant.

It is probable

(1) That the subjective effects of increased pressure, apart from voice changes and lip anaesthesia, depend upon psychical conditions, such as anxiety and excitement.

(2) The changes in the percentage of carbon dioxide in the alveolar air are conditioned solely by physical variations, and not by any increase or diminution in the respiratory metabolism.

In conclusion, the authors remark that they were unable to find any evidence in support of Snell's opinion ("Compressed Air Illness, or so-called Caisson Disease," London, 1896, Lewis, p. 212) that the presence of CO₂ in the respired air exercises a peculiarly unfavourable influence under increased pressure. Thus in one experiment the percentage of CO₂ in the chamber air, at +31lb., was 0.62 (equivalent to more than 1.8 per cent. at +0), and no untoward results occurred on decompression.

Society of Chemical Industry (London Section), April 2.—Mr. A. G. Salamon in the chair.—Ropiness in flour and bread, its detection and prevention: E. J. Watkins. Breads most frequently attacked by this disease are such as contain bran or low-grade white flours. In the present investigation it has been sought by means of culture experiments and the artificial production of ropiness in sound flour to establish the identity of an organism isolated from specimens of ropy bread and flour obtained in England. Cultures made from this bread yielded a small motile bacillus which, after repeated subculturing, was used in a series of experiments made with a known sound flour. Varying proportions of the culture were added to the water used for making dough. Such doughs when fermented showed no sign of bacterial effects, and the bread produced was of normal character when it left the oven. The bread when kept in a moist atmosphere at temperatures of 25° C. to 35° C. became ropy in about twenty-four hours. When the temperature was kept below 18° C. the disease did not appear. Dryness of the air generally prevented ropiness even when the temperature was high. Acids exercise a powerful influence in preventing the growth of the bacillus, it being found in a series of tests with varying quantities of acetic acid in the dough that the bread did not become ropy when kept long periods under conditions suitable to the bacillus. The cultural and microscopic characters prove the organism to be *Bacillus mesentericus* (Flügge).—The Röse-Herzfeld and sulphuric acid methods for the determination of the higher alcohols; a criticism: V. H. Velej. The two methods generally adopted for the determination of the higher alcohols are the Röse-Herzfeld (officially recognised in this country,

Germany, and Switzerland) and the sulphuric acid method, adopted in France, consequently practised in this country, and officially used as a general qualitative test for the purity of all kinds of alcohol in Russia. Since these methods give very divergent results in the hands of different analysts, the author records various experiments to determine the accuracy or otherwise of the processes, and also criticises them.

Entomological Society, April 4.—Mr. C. O. Waterhouse, vice-president, in the chair.—Specimen of the very rare ant *Formicoxenus nitidulus*, a neuter, found in a nest of *Formica rufa* at Weybridge during the present month: H. St. J. Donisthorpe.—Specimen of *Platypsylla castoris*, Ritsema, a coleopterous parasite of the beaver, from France: G. C. Champion.—Specimens of a Noctua, believed to correspond to Dr. H. Guard-Knagg's original description of *Agrotis helvetina* ("Entomologist's Annual," 1872): W. S. Sheldon.—Examples of butterflies taken last year in Majorca showing injury to the wings, caused apparently by the attacks of lizards: A. H. Jones.—An account of the calcaria observed on the legs of some Hymenoptera: Rev. F. D. Morice. The calcaria were, the author said, quite constant in each species, and useful, therefore, as distinguishing characters, the only hymenopteron he had come across without them being the ordinary hive-bee. Kirby and Spence considered that they were used for climbing purposes, but this was unlikely, as the spurs occurred in species which did not climb at all. So far as he had noticed, they were used by members of this order for the purpose of cleaning their antennae. Mr. C. O. Waterhouse said that similar spurs existed in the Trichoptera, though they did not assume beautiful forms as in the Hymenoptera; but as to their uses, he was not aware that any observations had been published or made on the subject. Mr. G. C. Champion remarked that they were also well developed on the hind-legs of some Coleoptera.

Linnean Society, April 5.—Dr. A. Smith Woodward, F.R.S., vice-president, in the chair.—Some plants new to the pre-Glacial flora of Great Britain: Clement Reid. Fifty photographs were exhibited derived from material procured at Pakefield, near Lowestoft. The remains were black, and therefore troublesome to photograph, but the specimens themselves could not long be preserved, as an efflorescence occurred, and they fell to pieces, but experiments were now being conducted with the view of permeating the fruits with paraffin, and so ensuring their preservation.—A second contribution to the flora of Africa: Rubiaceae, and Compositae part ii.: S. Moore. In a former memoir composite plants were alone dealt with. In the present paper are submitted descriptions of Rubiaceae as well as of Compositae. To the former natural order twelve new additions are proposed, referable to the following genera:—*Otomeria*, *Oldenlandia*, *Heinsia*, two species of *Tarenna*, *Randia*, *Tricalysia*, *Polyspheria*, and two species each of *Canthium* and *Diodia*. The Compositae regarded as new number fifteen, of which *Helichrysium* claims six species; *Vernonia*, *Inula*, and *Senecio* two each, and *Felicia*, *Bidens*, and *Dicoma* one each.—The structure of the stem and leaf of *Nuytsia floribunda*, R. Br.: E. J. Schwartz. *Nuytsia floribunda* is a member of the Loranaceae and a native of West Australia, and, unlike other members of this order, it is non-parasitical and a tree attaining a height of some 30 feet.—Taiwanites, a new genus of Coniferae from the Island of Formosa: B. Hayata. Dr. Masters considers the genus a valid one, judging from a small scrap which he had received from the author, who believed his new genus to be intermediate between *Cryptomeria* and *Cunninghamia*: he himself pointed out that it combined the foliage of *Athrotaxis* with the cone of *Tsuga*; in any case it is a very interesting genus.

Royal Astronomical Society, April 11.—Mr. W. H. Maw, president, in the chair.—Explanation of the apparent secular acceleration of the earth's orbital motion: P. H. Cowell. The author had found that certain arbitrary assumptions with regard to the sun and moon satisfied the conditions of six ancient solar eclipses. He concluded that it was wrong to assign an arbitrary secular acceleration to the moon and none to the sun, and to justify this by

supposed tidal influence. The rate at which the day increases appears to be 0.005s. per century, this being about ten times greater than previous estimates.—Planetary inversion: F. J. M. **Stratton**. The author had been led to this investigation by Prof. Pickering's suggested explanation of the cause of the retrograde motion of Phœbe, the ninth satellite of Saturn. It was assumed that at the time this satellite was thrown off from its primary the latter had a retrograde motion of rotation, which subsequently became changed to a direct motion by the inversion of the planet's axis. The author concluded that while the theory remains for the present a speculative hypothesis, it is supported by the theory of tidal friction, and gives the only explanation of certain facts that has so far been put forward.—High-level chromospheric lines and their behaviour in sun-spot spectra: Prof. A. **Fowler**. The observations showed that enhanced lines appear as high-level lines in the chromosphere, and that the corresponding Fraunhofer lines are generally enfeebled in the spectra of sun-spots.—Discussion of the Harvard observations of the eclipses of Jupiter's satellites, 1878–1901: Prof. R. A. **Sampson**. The author gave an account of this discussion, which will be published by the Harvard Observatory.

CAMBRIDGE.

Philosophical Society, March 12.—Dr. Fenton, vice-president, in the chair.—A theory of the widening of lines in the spectrum: Prof. J. J. **Thomson**. The view put forward is that the widening of the lines is due to resonance. The luminous molecules emit waves of light, and as these are also waves of electric and magnetic force, a luminous particle produces a strong electrical field in its neighbourhood; this will act on the vibrating electrified particles in a neighbouring luminous molecule, while this second molecule will exert similar forces on the first molecule. Two adjacent luminous particles thus exert forces on each other, and, if the natural periods of the two are equal, the action between them may result in a considerable change in the period. As the vibrating systems are surrounded by many systems, some at one distance and others at another, the changes produced in the periods will not be constant, but may have any value included between certain limits, the range between the limits increasing with the number of luminous molecules. This range in the value of the periods causes the original bright line to be spread out into a band.—The transmission and reflection of the radiation from radio-active substances: Prof. J. J. **Thomson**. The amounts of secondary, tertiary, and radiation of a higher order transmitted through and reflected from a plate of matter placed in the path of radiation from radio-active substances are calculated, and methods obtained for comparing the total ionisation produced by the secondary and other rays with that produced by the primary rays.—(1) The asymptotic expansion of the integral functions

$$\sum_{n=0}^{\infty} \frac{x^n \Gamma(1+n\theta)}{\Gamma(1+n)} \quad \text{and} \quad \sum_{n=0}^{\infty} \frac{x^n \Gamma(1+n\theta)}{\Gamma(1+n+\mu\theta)}.$$

(2) The asymptotic expansion of integral functions defined by generalised hypergeometric series: Rev. E. W. **Barnes**.—A method of following the course of certain chemical actions, and a period of induction in the action of water on monochloroacetic acid: P. V. **Bevan**. The method described was to determine the resistance of the solution in which the chemical action was taking place. In dilute solutions, when an acid such as hydrochloric acid is set free as the action progresses, this method affords a very delicate way of observing the rate of decomposition. The action of water on monochloroacetic acid was investigated, and was found, except just at the beginning, to follow the normal monomolecular course.—The radio-activity of metals and their salts: N. R. **Campbell**. Measurements of the activity of metals and their salts show that the radio-activity of ordinary materials is an atomic property. The identity in respect of this property of samples of the same salt prepared by different methods shows that the apparent activity cannot be due to impurity.—A relation between the velocity and the volume of the ions of certain organic acids and bases: T. H. **Laby** and G. A. **Carse**. A method of finding the relation between the velocity and

linear dimensions of an ion is to calculate the latter by taking the cube root of the ionic volume found from the molecular and atomic volumes, and combine this with the ionic velocity. It is found that the product of these two quantities is approximately constant for the members of the homologous series which the authors have examined, viz. the fatty acids, amines, pyridines, and anilines, but varies from series to series.—A preliminary note on the maiotic phenomena in the eggs of the hermaphrodite *Angiostomum nigrovenosum* (*Ascaris nigrovenosa*): S. A. **McDowall**. The synopsis of the chromosomes is very clearly shown in this animal.—The reduction of the general ternary quintic to Hibbert's canonical form: H. W. **Richmond**.

DUBLIN.

Royal Dublin Society, February 20.—Dr. W. E. Adeney in the chair.—The vapour pressure of a pure liquid at constant temperature: Prof. Sydney **Young**. In order to find whether the statement contested by Battelli and others, that the vapour pressure of a pure liquid is independent of the relative volumes of liquid and vapour, is borne out by experimental observations, the author has collected together the results of his determinations of the vapour pressures of twenty-seven carefully purified liquids. He points out (1) that errors due (a) to the presence of dissolved air and other impurities, (b) to the vaporisation of mercury, and (c) to readings being taken too rapidly, would have the effect of making the observed pressures higher at small than at large volumes; (2) that those errors must be smaller when readings are taken during evaporation than during condensation; (3) that the errors are likely to be greater at high temperatures than at low ones. With twenty-one out of the twenty-seven pure substances, forty-five series of determinations were successfully carried out, the liquids having been almost free from air, and no signs of decomposition having been observed. There were 493 determinations of vapour pressure, each being the mean of, as a rule, four readings taken at different volumes. That the mean observed fall in pressure during evaporation for the 257 determinations at temperatures up to 180° was less than 1 in 10,000 may be regarded as a proof that the vapour pressure is really independent of the volume. At temperatures above 180° the mean fall in pressure for 236 determinations was 1 in 1450.—Views illustrating the permo-Carboniferous glaciation of South Africa: Prof. G. A. J. **Cole**.

March 20.—Prof. Sydney Young, F.R.S., in the chair.—Electromagnetic mass: Prof. A. W. **Conway**. This was a continuation, in an expanded form, of the paper read at the meeting held January 16.

PARIS.

Academy of Sciences, April 9.—M. H. Poincaré in the chair.—Some problems in mathematical physics appertaining to the equation of M. Fredholm: Emile **Picard**.—A means of controlling a system of clocks synchronised electrically: G. **Bigourdan**. In a system of clocks controlled electrically the synchronism may be disturbed owing to various causes. By the use of a galvanometer attached to each controlled clock, and the suppression of the directing current once in each minute, at the zero second, any deviation can be measured.—Concerning the presentation of a number of the "Catalogue photographique du Ciel" from the Observatory of Toulouse: M. **Loewy**. This number is chiefly devoted to the measurements of the rectilinear coordinates of stellar images taken photographically with a view to the determination of the solar parallax by means of the planet Eros.—The transformations of systems of partial differential equations of the second order: J. **Clairin**.—The dichroism, double refraction, and conductivity of thin metal plates obtained by cathode pulverisation: Ch. **Maurain**. The effects described were shown most strongly by bismuth, but similar results were obtained with gold and nickel.—Gaseous osmosis through a colloidal membrane: Jules **Amar**. From the experiments described the author concludes that gaseous osmosis through the tissue employed is in accord neither with the experimental laws of Bunsen and Graham nor with the theories of Stefan and O. Meyer.—The variations of the absorption bands of a crystal in a magnetic field: Jean **Becquerel**. Some of

the results obtained can be most readily explained by assuming that certain bands correspond to the vibrations of positive ions.—The production of high vacua by means of liquid air: Georges **Claude** and René J. **Lévy**. The arrangement is based on the absorption of gases by charcoal at the temperature of liquid air.—The acoustic properties of certain halls for speaking: M. **Marage**. Experiments confirming the views put forward on the resonance of halls by Wallace **Sabine**.—The variations of some properties of quartz: H. **Buisson**. Two fine specimens of quartz were compared, measurements being made of their density, coefficient of expansion, double refraction, refractive index, and rotatory power. There were distinct differences between the two specimens, all the deviations being in the same sense. It is thus clear that quartz, even well crystallised, cannot be considered as a perfectly pure substance with absolutely defined properties, or even as a homogeneous body.—The radio-activity of springs of drinking water: F. **Dienert**.—Some pyrophosphoric compounds: J. **Cavalier**. The preparation and properties of the pyrophosphoric esters of ethyl, propyl, butyl, and amyl alcohols are described. They all proved to have molecular weights corresponding to the formula $R_3P_2O_5$, determined by the cryoscopic method.—Barium iodomercurates: A. **Duboin**.—The pure ferromolybdenums: Em. **Vigouroux**. In the direct combination of iron and molybdenum with the iron in excess, the definite compound Fe_3Mo is formed, and no other compound containing less molybdenum appears to be capable of existence.—The influence of the ketonic and acid grouping in the same molecule: L. J. **Simon**.—The condensation of the acetylenic amides with phenols. A general method for the synthesis of ethylene-oxyphenol amides: Ch. **Moureu** and J. **Lazennec**.—The genesis of an iron mineral: L. **Cayeux**.—A preliminary note on globoids and certain granulations of seeds, resembling the metachromatic corpuscles in some of their properties: J. **Beauverie** and A. **Guilliermond**.—The Khaya of Madagascar: H. **Jumelle** and H. **Perrier de la Bathie**. Reasons are shown for regarding this as a new species, *Khaya madagascariensis*.—Study of the variations of nitrogen and phosphoric acid in the juices of a grass plant: G. **André**.—The treatment of seed with copper salts: E. **Bréal**. The superficial sterilisation of seeds by copper solutions not only prevents cryptogamic diseases, but also causes a good utilisation of the reserves.—The heats of combustion and the composition of the bones of the skeleton of the guinea-pig, considered as a function of the age: J. **Tribot**.—The nucleus of the red blood corpuscles in birds: M. **Piettre** and A. **Vila**.—The Pleistocene glaciers in the valleys of Andorra and the neighbouring high Spanish valleys: Marcel **Chevalier**.—Contribution to the Tertiary flora of northern Morocco: Ed. **Bonnet**.—Observations on moving shadows at sunset and sunrise: Cl. **Rozet**. The phenomenon of moving shadows has hitherto been observed only during an eclipse of the sun. The author points out the conditions under which the same phenomenon can be seen at sunset and sunrise.—Measurements of the variations of the gravitation constant in the Simplon Tunnel: Marcel **Brillouin**.—The results of atmospheric studies in the region of the trade winds: L. **Rotch** and L. **Teisserenc de Bort**.

CAPE TOWN.

South African Philosophical Society, February 28.—Dr. J. C. Beattie, president, in the chair.—Rock specimens showing the occurrence of Glacial beds in the Griqua Town series of Hay: A. W. **Rogers**. Flattened and striated stones, the peculiarities of which can at present only be attributed to glacial agencies, occur in a hard ferruginous rock near the top of the Griqua Town series in Hay. They are of various sizes, from an inch or two up to 18 inches long. They consist of chert; a few grit pebbles are found, but as yet no granites or other igneous rocks are known from those beds; some hollows, now partly filled with specular iron, may represent limestone fragments. The boulders are scattered at wide intervals through the matrix in most cases, though gravely grits also occur.—Under water in south-eastern Bechuanaland: A. L. **Du Toit**. The term south-eastern Bechuanaland is used as including the divisions of Mafeking and Vryburg as far westwards as Kuruman.—A set of linear equations connected with homofocal surfaces: Dr. Thos. **Muir**.

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DIARY OF SOCIETIES.

MONDAY, APRIL 23.

SOCIETY OF ARTS, at 8.—Ivory: Alfred Maskell.
VICTORIA INSTITUTE, at 4.30.—Review of Sir Henry H. Howorth's "Ice or Water": Prof. Edward Hull, F.R.S.

WEDNESDAY, APRIL 25.

GEOLOGICAL SOCIETY, at 8.—Trilobites from Bolivia, collected by Dr. J. W. Evans in 1901-1902: Philip Lake.—Graptolites from Bolivia, collected by Dr. J. W. Evans in 1901-1902: Dr. E. M. R. Wood.—The Phosphatic Chalks of Winterbourne and Boxford (Berkshire): H. J. Osborne White and Llewellyn Treacher.

THURSDAY, APRIL 26.

ROYAL INSTITUTION, at 5.—The Digestive Tract in Birds and Mammals: Dr. P. Chalmers Mitchell.
SOCIETY OF ARTS, at 4.30.—Seistan, Past and Present: Colonel A. H. McMahon.
INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Long Flame Arc Lamps: L. Andrews.
MATHEMATICAL SOCIETY, at 5.30.—Perpetuants and Contraperpetuants: Prof. E. B. Elliott.—(1) A Question in the Theory of Aggregates; (2) The Canonical Forms of the Ternary Sextic and Quaternary Quartic: Prof. A. C. Dixon.—On the Question of the Existence of Transfinite Numbers: P. E. B. Jourdain.—Some Theorems connected with Abel's Theorem on the Continuity of Power Series: G. H. Hardy.—On a Set of Intervals about the Rational Numbers: A. R. Richardson.

FRIDAY, APRIL 27.

ROYAL INSTITUTION, at 9.—Ore Deposits and their Distribution in Depth: Prof. J. W. Gregory, F.R.S.
INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Petroleum Fuel in Locomotives on the Tehuantepec National Railroad of Mexico: Louis Graeven.
PHYSICAL SOCIETY, at 5.
AERONAUTICAL SOCIETY, at 8.—The Use of the Balloon in the National Antarctic Expedition: Captain Robert Falcon Scott, R.N.—The Experiments of the Brothers Wright: Sir Hiram S. Maxim.

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